

Atlantic Richfield Company

\$ L %3 L DI I LOLDWIG L FRP L



*DU\ L 5LOH\ L DQG\ L / \ QGD\ L 'HMFKOPEDXOW\ ± L 86\ L (3\\$ L 5HJLRQ\ L
'HFPEHU\ L ← ☀ L ± !! ¶ ↑ L
3DJH\ L ± L RI\ L T L

6LWH\ ZLGH\ L

x\ L :RUN\ L FRQWLOQH\ L RQ\ L XSGDWLQJ\ L WKH\ L /HYLDWKDQL\ OLQH\ L SURMHFW\ L 'DADEDVH\ L ZLWK\ L GDWD\ L IURP
SHUIRUPHG\ L E\ L \$MDDQNLFL\ 5LFKILHOG\ L DQG\ L YDULRXV\ L DJHQFLHV\ L
x\ L 2Q\ L 1RYHPEHU\ L ¶ ↑ ☀ L ± !! ¶ ↑ ☀ L DL\ FRQIHHQFH\ L FDOD\ L ZDV\ L FROGXFWHG\ L ZLWK\ L WKH\ L 86\ L (3\\$ L
SURJUHW\ L XSGDWLQJ\ L

L

\\$&7,9,7,(6\ L)25\ L 83&20,1*\ L 0217+L

\$VSHQ\ L 6HS\ L

x\ L &RQWLOQH\ L RSHUDWLQJ\ L RI\ L WKH\ L \$8% L 7UHDWPHQW\ L 6\ WHP\ L LQ\ L UHFLUFXODWLQJ\ L PRGH\ L DQG\ L FROGXFW\ L /\$
PRQWWRULQJ\ L DQG\ L PDLQWHDQFH\ L DV\ L RWWDQH\ L LQ\ L WKH\ L 5HPRYDO\ L \$FALRQ\ L :RUN\ L 3DQ\ L ♂ 5\$:3\ L
ZLQH\ L DFRHW\ L YLVW\ L ZDV\ L FRPSCHWHG\ L WKH\ L ILUVW\ L ZH\ N\ L RI\ L 'HFPEHU\ L

L

&8' L DQG\ L '6\ L

x\ L 'DAD\ L IURP\ L ± !! ¶ ↑ L +'6\ L 7UHDWPHQW\ L 3DQW\ L RSHUDWLQJ\ L ZLQ\ L EH\ L FRPSLOHG\ L IRU\ L LQFOXVLQ\ L LQ
&RPSCHWLRQ\ L 5HSRUW\ L

L L

6LWH\ ZLGH\ L

x\ L \$ L 7HFKQDFDOL\ \$GYLVRU\ L &RPLW\ H\ L ♂ 7\$& L PHW\ L QJ\ L LV\ L VFKHGXOHG\ L IRU\ L -DQXDU\ L ± + ☀ L ± !! ¶ ↑ L
1HYDG\ L L L \$MDDQNLFL\ 5LFKILHOG\ L LV\ L VFKHGXOHG\ L WR\ L SURYLGH\ L DL\ VXPDU\ L RI\ L ± !! ¶ ↑ L UHM
PHW\ L QJ\ L

x\ L &RQWLOQH\ L WR\ L SURYLGH\ L SURMHFW\ L SURJUHW\ L XSGDWLQJ\ L WR\ L WKH\ L 86\ L (3\\$ L YLD\ L FRQIHHQFH\ L FDOD\ L L L
FDOD\ L LV\ L FXUHQW\ L VFKHGXOHG\ L IRU\ L 'HFPEHU\ L ± !! ☀ L ± !! ¶ ↑ L

x\ L &RQWLOQH\ L FRPSLOLQJ\ L LQIRUPDWLRQ\ L IRU\ L WKH\ L ± !! ¶ ↑ L \$QQXDO\ L &RPSCHWLRQ\ L 5HSRUW\ L ♂ GH\ L \$SULO\ L

x\ L &RQWLOQH\ L GHMULRPHQW\ L RI\ L WKH\ L ± !! ¶ → L \$PHQDFH\ L WR\ L WKH\ L 5\$:3\ L ♂ GH\ L ODUFK\ L ¶ ☀ L ± !!
GHMFULEH\ L 5HPRYDO\ L \$FALRQ\ L DFALYILW\ L WR\ L EH\ L SHUIRUPHG\ L DW\ L WKH\ L VVH\ L GULQJ\ L ± !! ¶ → L

, L \RX\ L KDYH\ L DQ\ L TXHWRQ\ L RU\ L FRPPHQW\ L SODMV\ L IHOL\ L IUH\ L WR\ L FRQWDFW\ L PH\ L DW\ L ♂ → L
\$QWKRQ\ L %URZQHES\ L FRP\ L

L

6LQFHJHO\ L

L


Dan McCarthy
IRU\ L

L L L L L L

L

7RQ\ L %URZQ\ L
SURMHFW\ L ODQDJHU\ L

L

*DU\ L 5LOH\ L DQG\ L /\ \QGD\ L 'HMFKOPEDQW\ ±\ L 86\ L (3\\$ L 5HJLRQ\ L L
'HRPEHU\ L ←\ \ L ±\ L !! \ L +\ L
3DJH\ L T\ L RI\ L T\ L

\$WDFKPHQW\ L

7DEOH\ L \ L ±\ L \$VSHQ\ L 6HS\ L %L RUHDFWRU\ L 7UHDWPHQW\ 6\WHP\ L ±\ L (QKDQFH\ L &RPSOLDQF\ L 6DPSOL\ L 5H
7DEOH\ L ±\ L ±\ L \$VSHQ\ L 6HS\ L %L RUHDFWRU\ L 7UHDWPHQW\ 6\WHP\ L ±\ L 5HFRQW\)ORZ\ L S+X\ L DQG\ L 253\ L
OHDXUHPHQW\ L L

FF\ L L L 'RXJODV\ L &DUH\ \ L /DKRQWDQ\ L 5HJLRQDOL\ :DWHU\ L 4XQOLW\ L &RQWIROL\ %RDUG\ L
5RQDOG\ L +DOHV\ \ L \$WODQWLFL\ 5LFKILHOG\ L &RPSDQ\ L

1DWDQ\ L %ORFDQ\ L %3\ L L

5HJLQDOG\ L ,ODR\ \ L \$WODQWLFL\ 5LFKILHOG\ L &RPSDQ\ L

\$GDPL &RKHQ\ L (VT\ \ \ L 'DYLVL *UDKDP\ L L 6A\KEEV\ L //3\ L

'DYH\ L OF&DUW\ \ L &RSSHU\ L (QYLURQPHQWDO\ L &RQVMONLQJ\ L

ODUF\ L /RPEDUGL\ \ L \$PHF\ L)RWHU\ L :KHIOHU\ L (QYLURQPHQW\ L ,QIUDWULXFWXUH\ L ,QF\ L
6DQG\ L 5LHM\ \ L (Q6FL\ \ L ,QF\ L

7\$%/(L ¶

\$63(1 L 6((3 L %,25(\$&725 L 75(\$70(17 L 6<67(0 L + L (1+\$1&(' L &203/, \$1&(' L 6\$03/(L 5(68/76

129(0%5 L + !! ¶ + L 0217+/

'UDW L + L 3URYLVLRQDOL 'DVD

3DUDPHWHU	%DVLV	1RYHPEHU L ← ☰ L + + !! \$63,1)- \$6% L ,QIOXHQW PJ↓ /	1RYHPEHU L ← ☰ L + + !! \$63())- \$6% L (IIOXHQW PJ↓ /	ODJILPXP L ↑'LVFKDJH &UIWHLUD ♂ PJ↓ /	\$YHJDJH! 'LVRKDJH &UIWHLUD ♂ PJ↓ /
S+ L ♂ V¶	)LHD	↑ ◀	→ ◀	+	↑ ◀ !! U
\$OPLQXP	'LWROY-	T	!! ◀	↑ ◀	↑ ◀
\$UWQLU	'LWROY-	!! ◀ !! !!	!! ◀ !! !!	!! ◀	!! ◀
&DGPLXP	'LWROY-	!! ◀ !!	L !! ◀	!! ◀ !!	!! ◀ !!
&DOFLXF	'LWROY-	↑ →	¶ ↑	+	+
&KRULG	7RWD	T ▲	L ▲	+	+
&KURPLXP	'LWROY-	!! ◀ !!	L !! ◀	!! ◀ !!	!! ◀ !!
&RSSHL	'LWROY-	!! ◀	L !! ◀	!! ◀ !!	!! ◀ !!
+DUGCHM	'LWROY-	↑	↑	+	+
,UR	'LWROY-	←	L !! .	↑ ◀	¶ ▲
/HDC	'LWROY-	L !! ◀	L !! ◀	!! ◀ !!	!! ◀ !!
ODJQHMLXP	'LWROY-	↑	↑	+	+
1LFNH	'LWROY-	!! ◀	!! ◀ !!	!! ◀	!! ◀ !!
3KRVSKURX	'LWROY-	L !! .	L !! .	+	+
6HCHQLXF	7RWD	!! ◀ !! !!	L !! ◀	13	!! ◀ !!
6XOIDW	7RWD	¶ ↑	→ T	+	+
=LCF	'LWROY-	!! ◀	L !! .	!! ◀	!! ◀
\$FLGLW	7RWD	↑ !!	L .	+	+
\$ONDOLQWM L ♂ %LFDUE	7RWD	L .	↑	+	+
\$ONDOLQWM L ♂ &DUE	7RWD	L .	¶	+	+
\$ONDOLQWM L ♂ +\GUF	7RWD	L .	L .	+	+
\$ONDOLQWM L ♂	7RWD	L .	++	+	+
7RWDOL 'LWROYHG L	7RWD	↑ +	¶ ↑	+	+
7RWDOL 6XVSHQHG L €	7RWD	L	L	+	+

SEFHYLDNLQV

¶ ↗ L L S+ L YDOXHV DHL T LHD L PHDXLHPHQW L DQG L DHL U + L + &RQWNLXHQW L WKDW ZHL L CRW GHWFHG L DHL OLWHL DVL XQJWV | | | | | DQG L WKH L UHSRUWLQJ L OPLW L VLRQZQ

↑ ◀ L L 'LVFKDJH L FUWHLUD L DQG L EDMLV IRU L FD[L PXP L DQG - L + 5HMXWL CRWFG L ZLWK L | - | L DHL DQG L HWALPDHG L YDOXH L RU L DUH L OLWHL L QL WKL 5HTXHWV IRU L \$SSURYDOL RI L ORGLIL ZHL L CHW L WKDQ L WKL L UHSRUWLQJ L OPLW EXW JUHDWU L WKDQ L RU L SHPRYDOL \$FWLRQ L DW WKL /HYLDWQD L OLCQ L OHFLDQGP L HTXDO L WR L WKL PHWKRG L GHWFHQW L OPLW

% + &RPSRQG L ZDV L TXQG L LQ WKL EODQNL DQG L VDPSCH

)¶ L + ~~~~~ ~~~~~ ~~~~~ ~~~~~ ~~~~~

OPLW

A L + ,QWUXPHQW L HCHQHG L 4& L L V L RXWLG L DFFHSWDFH L

OPLW

PJ↓ / L + PLOOLJDPV L SHU L OLWHL

13 L + 1RWL 3URPXOUDHG

VK X L + WADQGDUG L XQJW

7\$%/ (』 上

\$63(1 L 6((3 L %, 25(\$&725 L 75(\$70(17 L 6<67(0 L + L 5(&(17 L)/2: L S+ L \$1 L 253 L), (/ L 0(\$685(0(176

129(0%)(5⁺) ± 11.91 + 1.0217+/- 6800\$5<

$${}^{15}\text{N} \text{UDW} + {}^{15}\text{N} \text{3URYLVRQDO} \rightarrow {}^{15}\text{N} \text{DAD}$$

3DJH L q L RI L →

ED 001709 00001553-00005

78% (上)

\$63(1 L 6((3 L %, 25(\$&725 L 75(\$70(17 L 6<67(0 L + L 5(&(17 L)/2: L S+ L \$1 L 253 L), (/ L 0(\$685(0(176

129(0%)(5⁺) ± 11.91 + 1.0217+/- 6800\$5<

'UDW^L + L 3URYLVLRQDO^L 'DWD

7\$/% (上

\$63(1 L 6((3 L %, 25(\$&725 L 75(\$70(17 L 6<67(0 L + L 5(&(17 L)/2: L S+ L \$1 L 253 L), (/ L 0(\$685(0(176

129(0%)(5 ± 1) 0217+/ \times 6800\$5<

'UDW^L + L 3URYLVLRQDO^L 'DWD

3DJH \leftarrow RI \rightarrow

ED 001709 00001553-00007

78% (上)

\$63(1^L 6((3^L %25(\$7725^L 75(\$70(17^L 6<67(0^L +^L 5(&(17^L)/2:^L S:^L \$1^L 253^L),(/^L 0(\$685(0(176

129(0%(5⁺)!! 91 + 0217+/^L 6800\$5<

'UDW^L + L 3URYLVLRQDO^L 'DWD

3DJH L + L RI L →

ED 001709 00001553-00008

7\$% (」 上

\$63(1^L 6((3^L %,25(\$&725^L 75(\$70(17^L 6<67(0^L +^L 5(&(17^L))/2:^L S^L \$1^L 253^L),(/^L 0(\$685(0(176

129(0%(5^上!! ¶ + 0217+/^L 6800\$5<

'UDW^L + L 3URYLVLRODO^L 'DW

3DJH $\xrightarrow{\text{L}}$ RI $\xrightarrow{\text{L}}$

FD-001709 00001553-00009

7\$%/(L 上

\$63(1^L 6((3^L.%25(\$&725^L 75(\$70(17^L 6<67(0^L +^L 5(&(17^L)/2:^L S+^L \$1^L 253^L),(/^L 0(\$685(0(176

129(0%)(5⁺) ± 11.91 + 1.0217+/- 6800\$5<

$${}^{15}\text{N} \text{UDW} + {}^{15}\text{N} \text{3URYLVRQDO} \rightarrow {}^{15}\text{N} \text{DAD}$$

3DJH →

ED 001709 00001553-00010

7\$%/(L⁺
 \$63(1^L 6((3^L %,25(\$&725^L 75(\$70(17^L 6<67(0^L + L<sup>5(&(17^L)/2:^L S+^L \$1,^L 253^L),(/^L 0(\$685(0(176
 129(0%5^L + !! ¶ + L<sup>0217+/^L 6800\$5<
 'UDW^L + L^{3URYLVLRQDOL} 'DAD</sup></sup>

'DWH	\$VSHQ ^L 6HHS ^L %LRUHDFARUL ^L , QIOXHQW ^L			ODQKRC ^L ♀ ^L RU ^L			ODQKRC ^L ♀ ^L RU ^L			ODQKRC ^L ♀ ^L RU ^L			\$VSHQ ^L 6HHS ^L %LRUHDFARUL ^L		
	)CRZ ^L ♂ JSP	S+ ^L ♂ V◀	253 ^L ♂ P9[	S+ ^L ♂ V◀	253 ^L ♂ P9[	S+ ^L ♂ V◀	253 ^L ♂ P9[	S+ ^L ♂ V◀	253 ^L ♂ P9[	S+ ^L ♂ V◀	253 ^L ♂ P9[	S+ ^L ♂ V◀	253 ^L ♂ P9[
!! ← ↑ !!	↑ ↖	↑ ↖	↑ ↑ .	← ↖	↑ ↑ ↖	→ ↖	↑ ↑ ↖	→ ↖	↑ ↑ ↖	→ ↖	↑ ↑ ↖	← ↖	↑ ↖		
!! ← ↑ ¶	↑ ↖	↑ ↖	↓ → ↖	← ↖	↑ ↖	→ ↖	↑ ↖	→ ↖	↑ ↖	→ ↖	↑ ↖	← ↖	↑ ↖		
!! ← ↑ ⊥	↑ ↖	↑ ↖	↓ ↖ ¶	← ↖	↑ ↖ ¶	→ ↖	↑ ↖	↑ ↖	↑ ↖	→ ↖	↑ ↖	↓ ↖	↑ ↖		
!! ← ↑ T	↑ ↖	↑ ↖	↓ ↖	→ ↖	↑ ↖ ¶	→ ↖	↑ ↖	→ ↖	↑ ↖	→ ↖	↑ ↖	→ ↖	↑ ↖		
!! ↓ !!	↑ ↖	↑ ↖	↓ ↖	← ↖	↑ ↖ ¶	→ ↖	↑ ↖	→ ↖	↑ ↖	→ ↖	↑ ↖	→ ↖	↑ ↖		
!! ↓ ¶↑ ⊥	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖		
!! ↓ ⊥ !!	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖		
!! ↓ ⊥	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖		
¶ !! ↓ !!	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖		
¶ !! ↓ ¶	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖		
¶ !! ↓ ⊥	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖		
¶ ¶ !! ↓ ⊥	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖		
¶ ¶ !! ↓ ⊥	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖		
¶ ¶ ¶ !! ↓ ⊥	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖	↑ ↖		

1RWL

¶ \$VSHQ^L 6HHS^L %LRUHDFARUL^L QIOXHQW^L)CRZ^L UDWH^L PDVXUHPQW^L DUH^L LHOG^L PDVXUHPQW^L FROCHWGL^L ZHKL^L D^L JUDGXWGL^L
 ¶ /RZ^L S+^L PDVXUHPQW^L GH^L WR^L SRZHJ^L RXADJH^L DOG^L DWRFQW^L FKPLFDOL^L SXPS^L GRZQALPH^L GULQ^L WKH^L LQH-WWUL^L IDLG^L
 ¶ /RZ^L S+^L PDVXUHPQW^L GH^L WR^L LQH-DWHL^L LQ^L V\WHP^L)CRZ^L UDWH^L FKPLFDOL^L GRVLQJ^L UDWH^L CDJJHG^L EH-KLOG^L WKHM^L
 XQDEOH^L WR^L SUH-QW^L GHPLDMH^L LQ^L V\WHP^L S^L
 ¶)LHOG^L PDVXUHPQW^L DM^L LQH-WWUL^L GLDWHL^L EURUHDFARUL^L PDQKRC^L ZH-LH^L CRW^L FROCHWGL^L ZKHQ^L UHFLUPXDWLRQ^L RSHLDWLRLQ^L ZI
 LQH-LUXSWHG^L GH^L WR^L VOGHJH^L G-ZH-WLQJ^L RSHLDWLRLQ^L ELRPHQOL^L KOKWKLQJ^L RUL^L RWKHJ^L PDQHWDQFH^L DRWLYLWHL^L
 ¶ 253^L PDVXUHPQW^L PD^L EH^L LQDFXUDWHL^L GH^L WR^L SUREH^L FDQLEUDALRQ^L LWXHV^L
 ¶ /RZ^L S+^L PDVXUHPQW^L GH^L WR^L D^L SRZHJ^L RXADJH^L DOG^L DWRFQW^L FKPLFDOL^L SXPS^L VRKGRZON^L
 ¶ (10XHQW^L SDQDPHWJV^L ZH-LH^L FROCHWGL^L DM^L WKH^L VOGHJH^L G-ZH-WLQJ^L LQH-DWHL^L GLVRQDQJH^L
 ¶ +LJK^L 253^L PDVXUHPQW^L LQ^L PDQKRC^L GH^L WR^L UHFLUPXDWLRQ^L V\WHP^L GRZQALPH^L
 ¶ (10XHQW^L ROD^L SDQDPHWJV^L ZH-LH^L FROCHWGL^L GULQ^L H10XHQW^L CDQGHJ^L VRUHQ^L UHSQDLV^L
 ¶ !, QIOXHQW^L ROD^L SDQDPHWJV^L ZH-LH^L FROCHWGL^L GULQ^L \$VSHQ^L VROGL^L PDQJH-PHQW^L

3DJH^L → L RI^L →